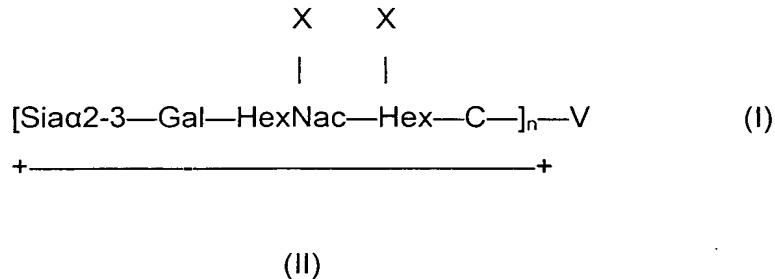


CLAIMS

1. Use of sialyzed carbohydrates of the following general formula I having at
 5 least one carbohydrate unit of the following general formula II:



wherein

Sia means a sialic acid or a sialic acid derivative in an α 2-3 bond,

Gal means a galactose-monosaccharide unit,

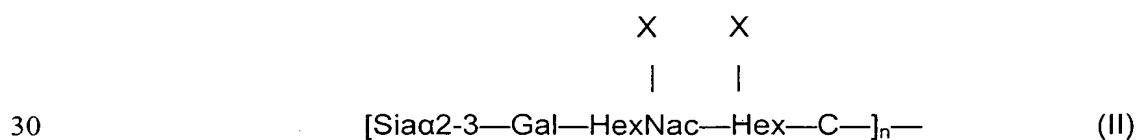
15 HexNac means an N-acetylated galactosamine-monosaccharide unit or glucosamine-monosaccharide unit (GalNAc or GlcNAc),

Hex means a galactose-monosaccharide unit or glucose-monosaccharide unit (Gal or Glc),

C represents HexNac or Hex or is absent,

20 n represents 1 to 50,

V represents OH, a carbohydrate residue or a connecting point on a carrier T, with the proviso that, if V represents OH, n represents 1, and, if V represents a carbohydrate residue or a carrier T, n means the number of the carbohydrate units that are each directly bound to this carbohydrate residue or carrier and which are of the general formula II



X means a sialic acid or a sialic acid derivative thereof, wherein a second sialic acid or a sialic acid derivative or several sialic acids or sialic acid derivatives can be bound to the sialic acid or the sialic acid derivative in an α -2-8 bond, a phosphate group, sulphate group or carboxyl group, or a monosaccharide including a phosphate group, sulphate group or carboxyl group, and only one of the residues X is present,
5 for the immunomodulation, immunosuppression and prevention as well as treatment of infections in humans and animals.

10

2. Use according to claim 1,

characterized in that

one, two, three, four, or all of the following criteria i) through iv) are met:

- 15 i) Sia represents acetyl neuraminic acid (NeuAc) or N-glycolyl neuraminic acid (NeuGc),
- ii) the sialic acid derivative or the sialic acid derivatives of the residues Sia and X is/are an O-acyl derivative and in particular an O-acetyl derivative,
- iii) the carrier T is a peptide, a protein, a polymer or a biopolymer, with the linkage with said peptide or protein in particular being N-glycosidic or O-glycosidic, and
- iv) the carbohydrate residue constituting the residue V is a monosaccharide residue, an oligosaccharide residue or a polysaccharide residue.

20

25 3. Use according to claim 1,

characterized in that

the carbohydrates of general formula I are selected from disialyl-lacto-N-tetraose (DS-LNT, V = OH, HexNac = GlcNAc, Hex = galactose (Gal), C = glucose, Sia = α -2-3 NeuAc, X = α -2-6 NeuAc on HexNac), disialyl-lacto-N-

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neo-tetraose (DS-LNnT), glycomacropeptide (GMP), ganglioside G_{D1a}, ganglioside G_{T1b} and ganglioside G_{T1c}.

4. Use according to any one of claims 1 through 3,

5 characterized in that

T represents lipophilic compounds, and the carbohydrate unit or carbohydrate units of general formula II represents or represent the head group(s) thereof.

10 5. Use according to claim 4,

characterized in that

said lipophilic compounds are glycolipids and in particular gangliosides.

6. Use according to any one of the preceding claims,

15 characterized in that

the carbohydrate or carbohydrates of general formula I is/are used in an amount of at least 1 mg per kg of body weight.

7. Use according to any one of the preceding claims,

20 for the prevention and treatment of infections of the gastrointestinal tract, blood system, respiratory passages, urogenital tract, as well as the nasopharynx.

8. Use according to any one of the preceding claims,

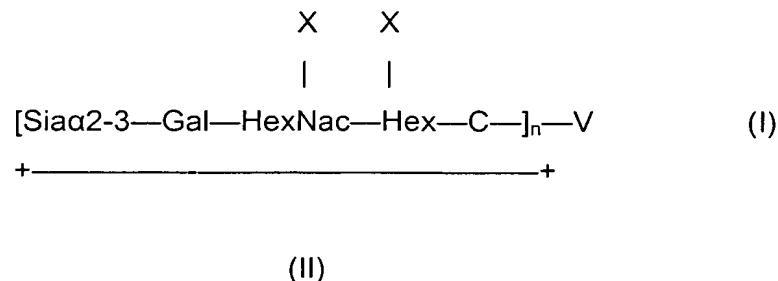
25 characterized in that

the carbohydrate or carbohydrates of general formula I are incorporated into a fluid or solid food composition (with the exception of human milk), dietetic composition or pharmaceutical composition for administration to a human or an animal, or serve for the preparation of such a composition for the immunomodulation, immunosuppression and treatment of infections in humans and animals.

9. Use according to claim 8,
characterized in that
the pharmaceutical composition serves for an oral, lingual, nasal,
5 bronchial, vaginal, topical (skin and mucosa) and *per os* administration, for
an administration by means of a probe into the stomach of a human or an
animal, or for an administration as an infusion.
10. Food composition, dietetic composition or pharmaceutical composition
10 containing at least one carbohydrate of general formula I as described in
any one of claims 1 through 5.
11. Composition according to claim 10,
characterized in that
15 the composition may contain a further carbohydrate or several further
carbohydrates, which are different from the carbohydrates of claim 1, a
further active agent or several further active agents and/or a further
ingredient, which is known and suited for the corresponding composition,
or more of such ingredients, wherein in the case of a pharmaceutical
20 composition a usual auxiliary agent or several usual auxiliary agents,
including diluents, moisturizing agents, thickening agents, flavoring
agents, sweetening agents and carriers, may be present, and in the case
of a food composition or a dietetic composition, at least one further food
component may be present.
- 25 12. Method of immunomodulation, immunosuppression and treatment of
infections in humans and animals,
characterized in that
at least one carbohydrate of general formula I according to any one of
30 claims 1 through 5 or a composition according to claim 10 or 11 is
administered to a human or an animal, but not in the form of human milk,

in particular in such an amount that at least 1 mg of carbohydrate of general formula I is administered per kg of body weight to the human or the animal once daily.

5 13. Sialyzed carbohydrates of the following general formula I having at least one carbohydrate unit of the following general formula II:



wherein

15 Sia means a sialic acid or a sialic acid derivative in an α 2-3 bond,
 Gal means a galactose-monosaccharide unit,
 HexNac means an N-acetylated galactosamine-monosaccharide unit or glucosamine-monosaccharide unit (GalNAc or GlcNAc),
 Hex means a galactose-monosaccharide unit or glucose-monosaccharide unit (Gal or Glc),
 20 C represents HexNac or Hex or is absent,
 n represents 1 to 50,
 V represents OH, a carbohydrate residue or a connecting point on a carrier T, with the proviso that, if V represents OH, n represents 1, and, if
 25 V represents a carbohydrate residue or a carrier T, n means the number of the carbohydrate units that are each directly bound to this carbohydrate residue or carrier and which are of the general formula II



5 X means a sialic acid or a sialic acid derivative thereof, wherein a second sialic acid or a sialic acid derivative or several sialic acids or sialic acid derivatives can be bound to the sialic acid or the sialic acid derivative in an α 2-8 bond, a phosphate group, sulphate group or carboxyl group, or a monosaccharide including a phosphate group, sulphate group or carboxyl group, and only one of the residues X is present,
for the immunomodulation, immunosuppression and prevention as well as treatment of infections in humans and animals.